



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/823,665

04/14/2004

Waichi Yamamura

12073-0006

4902

22902 7590 12/28/2006
CLARK & BRODY
1090 VERMONT AVENUE, NW
SUITE 250
WASHINGTON, DC 20005

EXAMINER

LAZORCIK, JASON L

ART UNIT

PAPER NUMBER

1731

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

12/28/2006

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/823,665

Applicant(s)

YAMAMURA, WAICHI

Examiner

Jason L. Lazorcik

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>04/14/2004</u> . | 6) <input checked="" type="checkbox"/> Other: <u>IDS Filed: 09/16/2004</u> . |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 4, 6 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charles (3,275,470) and Lipp (4,175,942) in view of Applicants admitted prior art.

Specifically with respect to Claim 1, Applicant sets forth as "usual practice" a method of fabricating a glass rod (held equivalent to the claimed "glass preform" as per Claim 10 or "glass ingot" as per Claim 11) such that a glass matrix is mechanically processed into a perfectly round cylindrical body by means of a cylindrical grinder. According to applicant, it is well known that subjecting these glass materials to the disclosed grinding process results in surface roughening of the preform and in the

Art Unit: 1731

formation of microcracks in the surface of the glass material. Further applicant indicates that it is known in the art to soften the mechanically processed glass body by applying heat thereto and to "elongate the softened body into a glass rod of high circularity" (page 1, Lines 16-23). In accord with Applicants disclosure, all indicated process steps are deemed to be old and well established practice for those of ordinary skill in the art. It is further noted by the Examiner that the grinding process as disclosed is understood to render prima facie obvious the claimed process of grinding the cylindrical form "with free or fixed grains on the surface thereof" as set forth in claim 4.

In the fiber drawing process set forth by Lipp, it is disclosed that difficulty is encountered during the draw operation when attempting to "find an acceptable combination of furnace temperature, drawing tension and drawing speed." The reference continues by indicating that it is desirable to decrease the processing temperature in an effort to optimize process economics, however such a change in process conditions results in an increase in glass viscosity and an increase in the required drawing tension. Further, the reference teaches that "due to the increase in the glass viscosity, the drawing tension is often increased to the point where the freshly formed glass is over stressed resulting in breakage" (Column 1, Lines 5-42). Lipp then teaches that the problem of breakage can be virtually eliminated by introducing steam or water vapor into the atmosphere surrounding the glass while it is being formed.

It would have therefore been obvious to one of ordinary skill in the art at the time of the invention, when practicing the old and well established method of forming an elongated glass rod as indicated by Applicant, to "apply steam to the surface of said

Art Unit: 1731

glass matrix” at least during the drawing step as taught by Lipp. This would have been an obvious modification to one of ordinary skill in the art seeking to minimize glass breakage during the drawing step.

Claim 12 is rejected under 35 U.S.C. 103(a) as obvious over Lipp as applied to Claim 1. In the instant case, Claim 12 is drawn to a glass rod made by the process set forth for the manufacture a glass rod as outlined in Claim 1. As such, Claim 12 amounts to a product-by-process claim for the processes set forth in Claim 1.

In the event any differences can be shown for the product-by-process claim 12, as opposed to the product taught by the Lipp reference, such differences would have been obvious to one of ordinary skill in the art as routine modification of the product in the absence of a showing of unexpected results, see *In re Thorpe*, 227 USPQ 964 (CAFC 1985). As the afore mentioned claim is a product by process claim, it is deemed that “[A]ny difference imparted by the product by process claims would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art the burden of proof is shifted to the applicants to establish that their product is patentably distinct, ...” *In re Brown*, 173 USPQ 685, and *In re Fessmann*, 180 USPQ 324. Further, “[P]rocess limitations are significant only to the extent that they distinguish the claimed product over the prior art product.” *In re Luck*, 177 USPQ 523 (1973).

Claims 2,3, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipp (4,175,942) and admitted prior art as applied to claim 1 under 35 USC 103(a) and in further view of the teachings of Charles (3,275,470). Lipp teaches that treating the

Art Unit: 1731

glass preform with steam during the drawing process significantly reduces breakage of the glass during the elongation step. Said reference further teaches that the exposure to steam should be performed at an elevated temperature of ~880-900oC during the draw process. As such, it fails to explicitly set forth a process wherein the steam is applied to the preform in a temperature or pressure range as set forth in Claims 2 and 3 or that the steam treatment should be preceded by an aqueous solution treatment of an acid or base as indicated in claim 5.

Charles teaches that it is known to immerse glass rods into a hydrofluoric acid bath or "an aqueous solution of an acid" to etch away surface damage in an effort to increase the "rupture strength" or mechanical durability of said rods. Charles further teaches that although the solution treatment provides some measure of strengthening, it is preferred to also treat the body in an atmosphere containing 80 percent to 100 percent saturated steam. The reference indicates that providing such a treatment with steam in the temperature range between about 190oC to 260oC provides a substantial and enduring increase in the material strength (Column 21, Lines 29-64). In the absence of any substantially unexpected results to the contrary, the applicants steam conditions of between 120 and 160oC are understood to be encompassed by the range of about 190oC to 260oC as set forth by the Charles process. Further, where Charles teaches a saturated steam vapor pressure (e.g. 100 percent saturated) and applicants claimed pressure range of 0.27 MPa to 0.63 MPa simply represents 100 percent saturated steam in the claimed temperature range of between 120oC to 160oC, said pressure range is deemed prima facie obvious over the prior art teaching.

In summary, it would have been obvious to one of ordinary skill in the art at the time of the invention according to the Charles teachings to treat the surface roughened glass rod to an aqueous acid solution after cylindrical grinding in order to etch away the surface damage and to provide a nominal increase in the material strength. Further, it would have been obvious to one of ordinary skill to perform the steam treatment after the acid treatment in order to provide an enduring increase in the strength of the glass body. Both of these treatments would have been obvious modifications to the prior art teachings in order to decrease the risk of glass breakage during the drawing process as indicated in the prior claim rejections.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipp (4,175,942) and admitted prior art as applied to claim 1 under 35 USC 103(a) and in further view of apparatus as taught by Brauer (6,715,317). While the prior art apparatus as presented above fails to explicitly teach the detailed nozzle structure or motion as set forth in the instant claims, Brauer figure 2 shows that a gas/fluid applicator of the claimed geometry glass fiber drawing applications where eliminating ovalities is desired. The reference further indicates (Column 4, Lines 58-63) that it is advantageous for the gas distribution to be movable along the longitudinal axis of the preform. It would have therefore been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus as taught by Lipp with the structural details as taught by Brauer in order to minimize oval deformation in the drawn fiber.

Conclusion

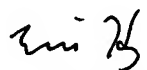
Art Unit: 1731

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571) 272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLL


ERIC HUG
PRIMARY EXAMINER